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METHODS AND SYSTEMS FOR FILTERING UNWANTED NOISE IN A MATERIAL METERING MACHINE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application having serial number 10/340,310, filed on January 9, 2003, now issued as U.S. Patent Number 6,774,822.

TECHNICAL DESCRIPTION OF THE INVENTION

[0002] The present invention is directed to decimation filters, and more particularly to a chain of finite impulse response (FIR) filters for decimating a digital signal with a high sampling frequency, down to a digital signal with a low sampling frequency, having a long word length while simultaneously filtering out line noise introduced by the line voltage.

BACKGROUND

[0003] In the application of material metering machines, load cells are relied upon to provide basic weight measurements. Typically, the material is loaded into a hopper, or a vessel, which is attached to the load cell. As the material passes out of the hopper at the bottom, new material is fed into the top of the hopper. The load cell monitors the weight of the hopper and passes those measurements to a processor which calculates the flow rates from the vessels. One area of technology where the material metering machines are used is for resinous or plastic materials. Typically, the resinous or plastic material is in the form of a pellet, of which there are approximately 30 to 80 to a gram. The pellets are passed though a weigh vessel one at a time, or at most a few at a time. Because the vessels have a high tare weight, which may be several